PATENT ABSTRACTS OF JAPAN

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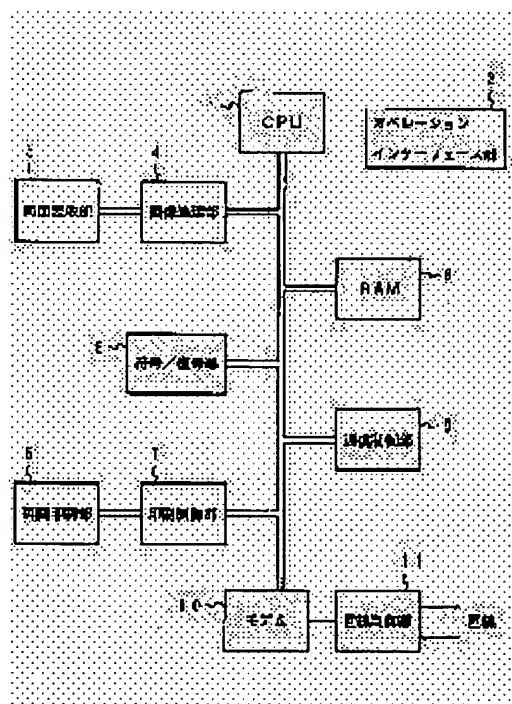(72)Inventor : **IIJIMA YUJI**
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(54) FACSIMILE EQUIPMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To enable a printing similar to an original document on a reception side without changing a communication means by confirming that there is a double-side printing function on the reception side and transmitting page information to the reception side.

SOLUTION: A reception side confirms a bit for indicating a double-side printing function of a non-standard function identification signal(NSF) and transmits a transmission terminal identifier(TSI) and a non-standard function set signal(NSS) to the reception side. In the NSS signal is inserted information on double-side reading and on each page is inserted information on whether double-side reading or one-side reading. Then, a printing control part 7 on the reception side sends picture data to a use face printing part 6 and a one-side printing is performed. It is informed to the reception side by the NSS that the first picture data are one-side printed and when the one-side printing is completed, the first sheet is discharged. Also the reception side is made to find by the NSS that the second sheet of document is double-side printed and when a printing is finished with one face, printing of the other face is prepared.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to double-sided read and the facsimile apparatus in which double-sided printing is possible.
[0002]
[Description of the Prior Art] Also when transmitting the two or more pages data which read one side also when the data which read both sides were transmitted, since double-sided read and the information about double-sided printing were not defined by T.30 which is an ITU-T recommendation although double-sided read and the equipment in which double-sided printing is possible had appeared as the function of facsimile apparatus improved in recent years, it has transmitted in the same procedure. Although it sends and notifies MPS (multi-page signal) to a receiving side from a transmitting side in transmitting two or more pages data, a double-sided signal cannot be added to this MPS.
[0003]
[Problem(s) to be Solved by the Invention] Since there is no information about both sides in a communication procedure even if it is facsimile apparatus with the function of double-sided reading and double-sided printing, the data transmitted have been sent to the equipment of a receiving side, without distinguishing whether it is data read [whether it is data read in both sides of a manuscript, and] in one side. Even if the function of double-sided printing is in the equipment of a receiving side, the equipment of a transmitting side does not understand whether one side printing of whether double-sided printing of the received data is carried out with the equipment of a receiving side is carried out. Therefore, when the manuscript (double-sided manuscript) which has data, and the manuscript (one side manuscript) which has data on one side were made intermingled on the front reverse side and it transmitted to it, there was a problem that the same printout as a manuscript could not be obtained with the equipment of a receiving side.
[0004]
[Means for Solving the Problem] In the facsimile apparatus which has the read station [this invention] which can read both sides of a manuscript, and the printing section in which double-sided printing is possible in order to solve the above-mentioned technical problem A registration means to register the information on whether the manuscript to transmit is one side printing or it is double-sided printing about each page, It is characterized by having the function which inserts in a predetermined signal said information registered by said registration means, and is transmitted, and the function which prints [one side-] or prints [double-sided-] received data based on said information inserted and transmitted to said predetermined signal.
[0005] According to this invention which has the above-mentioned configuration, in transmitting the data of a manuscript, it notifies the information on whether it is double-sided data and whether it is data of one side to a receiving side about each page. In a receiving side, the data of each page are both-sides-printed or one side printed based on the received information.
[0006]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained according to a drawing. In addition, the same sign is given to the element common to each drawing. Drawing 1 is the block diagram showing the facsimile apparatus of the gestalt of the 1st operation.

[0007] In drawing 1, CPU1 controls the whole facsimile apparatus and consists of an arithmetic circuit, a direct-memory-access-control circuit, an interrupt control circuit, etc. The operation interface section 2 is connected to CPU1, and the operation interface section 2 inputs registration data, such as the telephone number and a password. The double-sided read station 3 possesses the image reading sensor which reads a manuscript, and performs one side reading and double-sided reading of a manuscript. The image-processing section 4 performs an image processing to the image data read by the double-sided read station 3. A sign / decode section 5 performs coding of image data, and a decryption, referring to the Huffman table.

[0008] By control of the printing control section 7, the double-sided printing section 6 carries out the printout of the image data which received, and performs one side printing and double-sided printing. RAM8 stores the registration data inputted from the operation interface section 2 while storing image data temporarily. The communications control section 9 controls the communication procedure defined by the T.30 grade which is an ITU-T recommendation. A modem 10 is recovered from analog data while it modulates commo data to analog data. Moreover, the line control section 11 controls connection with a line switching network.

[0009] Drawing 2 is the explanatory view showing the operation interface section. In drawing 2, the LCD panel 21 and input keys 22 and 23 are formed in the operation interface section 2. An input key 22 is pushed when the page to which a manuscript corresponds carries out double-sided reading, and an input key 23 is pushed when the page to which a manuscript corresponds carries out one side reading. It can know what page information is inputted now by displaying a page on the LCD panel 21 one by one.

[0010] Next, actuation is explained. What has drawing data in both sides as a manuscript transmitted here is contained, and the actuation in the case of outputting like a manuscript by the receiving side is explained focusing on a communication procedure. In addition, both the facsimile apparatus of a receiving side shall also be equipped with the function of double-sided reading and double-sided printing by the facsimile apparatus of a transmitting side.

[0011] An operator first inputs the information on whether one side reading is carried out for whether double-sided reading is carried out about each page of the manuscript to be transmitted from now on by the operation interface section 2. The inputted information (registration data) is registered by being stored in RAM8.

[0012] Next, drawing 3 explains the communication procedure of the gestalt of the 1st operation. The sequence diagram based on T.30 whose drawing 3 is an ITU-T recommendation showing the communication procedure of the gestalt of the 1st operation, and drawing 4 are flow charts which show communication link actuation of a transmitting side. CNG (calling tone) is first transmitted from a transmitting side, and a receiving side is called. While the equipment of a receiving side, in response, sends CED (called station recognition signal) to a transmitting side, NSF (non-standard functional recognition signal), CSI (called station recognition signal), and DIS (digital recognition signal) are sent to a transmitting side. A transmitting side accepts these signals (step 1). As shown in drawing 5 at this time, it is declared that use the bit in a NSF signal and perfecting machine ability has equipment of a receiving side. In addition, drawing 5 is the explanatory view showing the configuration of a NSF signal.

[0013] A transmitting side checks the bit which shows the perfecting machine ability of NSF, and sends TSI (transmit-terminal recognition signal) and NSS (non-standard functional setting signal) to a receiving side (step 2). Into a NSS signal, as shown in drawing 6, while the information on double-sided reading is inserted, the information on whether it is double-sided reading and whether it is one side reading is inserted about each page of a manuscript. Drawing 6 is the explanatory view showing the configuration of a NSS signal.

[0014] In drawing 6, the bit 32 which shows whether it is double-sided reading and whether it is one side reading is set about all pages as page information based on the information which the bit 31 of a

double-sided function was set in the contents assignment term, and was registered into RAM8 by NSS. In the gestalt of this operation, in double-sided reading, "1" is set, and when it is one side reading, "0" is set. In the example of drawing 6 , the 1st sheet of a manuscript and the 3rd sheet show that the 2nd sheet is double-sided reading by one side reading. Next, a transmitting side transmits TCF (training check).

[0015] A receiving side sends CFR (reception preparation acknowledge signal) to a transmitting side while it checks the information on each page by NSS and sets the print station of the double-sided printing section 6 to double-sided mode (mode whose printing of both sides is enabled) (step 3). A transmitting side will read each page of a manuscript in distinction from one side and both sides based on the page information registered into RAM8, if CFR is received.

[0016] One side of the 1st sheet of a manuscript is read, the read drawing data are processed by the image-processing section 4, and the double-sided read station 3 is encoded in a sign / decode section 5. Analog data becomes irregular with a modem 10, and the encoded drawing data are controlled by the communications control section 9, and are transmitted to a receiving side through the line control section 11 (step 4). About the 1st sheet of a manuscript, only one side is read based on page information. Since the manuscript which should be transmitted still remains, a transmitting side transmits MPS (step 6).

[0017] If drawing data are received from the circuit controlled by the line control section 11, it will get over with a modem 10, and a receiving side will be further decrypted in a sign / decode section 5, and will be sent to the printing control section 7. As for the printing control section 7, delivery and one side printing are performed in drawing data to the double-sided printing section 6. The receiving side is told that the first drawing data are one side printing by NSS, and after one side printing is completed, it discharges the 1st form.

[0018] If a receiving side transmits MCF (message check) and a transmitting side receives this MCF, the 2nd sheet of a manuscript will be read. Since the 2nd sheet is double-sided reading according to the page information registered into RAM8, one side of the 2nd sheet is first read by the double-sided read station 3. The read drawing data are transmitted to a receiving side (step 4). Since the manuscript which should be transmitted still remains, a transmitting side transmits MPS (step 6).

[0019] A receiving side will print the drawing data on one side first in the double-sided printing section 6, if the 2nd drawing data are received. The receiving side is told that the manuscript of the 2nd sheet is double-sided printing by NSS, and when printing of one side is completed, printing of the opposite side is equipped with it.

[0020] If a receiving side transmits MCF and a transmitting side receives this MCF, other one side of the 2nd sheet of a manuscript will be read. The read drawing data are transmitted to a receiving side (step 4). Since the manuscript which should be transmitted still remains, a transmitting side transmits MPS (step 6).

[0021] A receiving side will print the drawing data to the opposite side of the form which the point printed in the double-sided printing section 6, if the 3rd drawing data are received. The receiving side is told that the manuscript of the 2nd sheet is double-sided printing by NSS, and when double-sided printing is completed, it discharges a form.

[0022] If a receiving side transmits MCF and a transmitting side receives this MCF, the 3rd sheet of a manuscript will be read. Since the 3rd sheet is one side reading according to the page information registered into RAM8, the double-sided read station 3 reads only one side of the 3rd sheet. The read drawing data are transmitted following on a training signal (step 4). Since the manuscript which should be transmitted now was ended, if EOP (procedure termination) is transmitted (step 7) and MCF is sent from a receiving side, a transmitting side will transmit DCN (cutting instruction) and will end a procedure.

[0023] A receiving side will print the drawing data on one side of a form in the double-sided printing section 6, if the 4th drawing data are received. The receiving side is told that the manuscript of the 3rd sheet is one side printing by NSS, and when printing of one side is completed, it discharges a form.

[0024] In addition, the round-head figure shown in drawing 3 supports the step in drawing 4 , the figure shown after drawing data shows the sequence of sending drawing data, and the 2nd drawing data and the

3rd drawing data are drawing data of both sides of the 2nd sheet of a manuscript in the example of drawing 3 .

[0025] As explained above, according to the gestalt of the 1st operation, by having added the information on a double-sided function to NSF and NSS, and having added the page information of a manuscript to NSS further, it can transmit without changing the communication procedure of T.30 which is an ITU-T recommendation about the drawing data of double-sided reading and double-sided printing, and there is effectiveness which can perform the same printout as a manuscript in a receiving side.

[0026] Next, the gestalt of operation of the 2nd of this invention is explained. The gestalt of the 2nd operation adds the information about double-sided printing to MPS, and transmits it to a receiving side. The 2nd configuration of the facsimile apparatus of the gestalt of operation is the same as that of the thing of the gestalt of the 1st operation shown in drawing 1 . Therefore, the explanation about a configuration is omitted and is explained focusing on a communication procedure about transceiver actuation. Drawing 7 is the sequence diagram showing the communication procedure of the gestalt of the 2nd operation.

[0027] Like the gestalt of the 1st operation, the information on double-sided reading about each page of a manuscript or one side reading is inputted from the operation interface 2, and is stored in RAM8, and, thereby, page information is registered. In addition, in the gestalt of the 2nd operation, there shall be three number of sheets of the manuscript which should be transmitted, the 1st sheet and the 3rd sheet shall be double-sided reading, and the 2nd sheet shall have become one side reading.

[0028] In drawing 7 , although not illustrated probably, if CNG is transmitted from a transmitting side and a receiving side is called, while the equipment of a receiving side sends CED to a transmitting side in response, NSF, CSI, and DIS will be sent to a transmitting side. A transmitting side accepts these signals. At this time, it declares that use the bit in a NSF signal and perfecting machine ability has equipment of a receiving side like the gestalt of the 1st operation. NSF is used for declaring perfecting machine ability, because the bit which declares perfecting machine ability into DIS which is a standardized procedure signal is not standardized, but it is also possible to use DIS when the bit which declares double-sided reading and perfecting machine ability to inside in the future [DIS] is assigned.

[0029] A transmitting side checks the bit which shows the perfecting machine ability of NSF, sends TSI and NSS to a receiving side, and transmits TCF further. Into a NSS signal, the information that the manuscript of double-sided reading is included is inserted.

[0030] A receiving side sends CFR to a transmitting side while it checks the contents of NSS and sets the print station of the double-sided printing section 6 to double-sided mode. A transmitting side will read each page of a manuscript in distinction from one side and both sides based on the page information registered into RAM8, if CFR is received.

[0031] One side of the 1st sheet of a manuscript is read, the read drawing data are processed by the image-processing section 4, and the double-sided read station 3 is encoded in a sign / decode section 5. Analog data becomes irregular with a modem 10, and the encoded drawing data are controlled by the communications control section 9, and are transmitted to a receiving side through the line control section 11. Although both sides are read based on page information about the 1st sheet of a manuscript, the drawing data of one side read first are transmitted. Then, since the manuscript which a transmitting side should transmit still remains, MPS is transmitted. Although it is notified that there is a page which had the same property as a degree by transmitting MPS, as shown in drawing 8 , the information which shows that the following page is the rear face of double-sided reading as additional information is added into MPS. Drawing 8 is the explanatory view showing the configuration of MPS.

[0032] in drawing 8 , the facsimile information field 41 add to the usual MPS -- having -- **** -- the facsimile information field 41 -- the information on a page -- a double-sided attribute, i.e., a front face, -- or the information on on the back is inserted. A front face is shown by "00" by drawing 8 , and a rear face is shown by "01" by it.

[0033] A receiving side's reception of the drawing data of the front face of the 1st sheet performs printing of one side in the double-sided printing section 6. The receiving side is told that the following

drawing data are drawing data of the rear face of double-sided reading by MPS, and when printing of one side is completed, printing of the opposite side is equipped with it.

[0034] If a receiving side transmits MCF and a transmitting side receives this MCF, the rear face of the 1st sheet of a manuscript will be read by the double-sided read station 3. The read drawing data are transmitted to a receiving side. Since the manuscript which should be transmitted still remains, a transmitting side transmits MPS. MPS transmitted here is a signal with which the facsimile information field 41 shown in drawing 8 are not added, and it is [that it is only notified that there is a page with the same property, and].

[0035] A receiving side will print the drawing data at the rear face of the 1st sheet in the double-sided printing section 6, if the 2nd drawing data are received. The receiving side is told that the 2nd drawing data are the rear face of double-sided reading in MPS. A receiving side sends MCF to a transmitting side.

[0036] If a transmitting side receives MCF, the drawing data of the 2nd sheet of a manuscript will be read, and it will transmit to a receiving side, and MPS will be transmitted. Since the 2nd sheet of a manuscript is one side reading, MPS transmitted here is a signal with which the facsimile information field 41 are not added.

[0037] A receiving side transmits MCF to a transmitting side while printing the drawing data in the 2nd form in the double-sided printing section 6, if the 3rd drawing data are received.

[0038] A transmitting side's reception of this MCF reads the 3rd sheet of a manuscript. Since the 3rd sheet is double-sided reading according to the page information registered into RAM8, the double-sided read station 3 reads the front face of the 3rd sheet first. It is transmitted to a receiving side and the read drawing data transmit MPS after that. Into MPS transmitted here, the information which shows that the following page is the rear face of double-sided reading as additional information is added.

[0039] A receiving side's reception of the drawing data of the front face of the 3rd sheet performs printing of one side in the double-sided printing section 6. The receiving side is told that the 4th drawing data are drawing data of the front face of double-sided reading by MPS, and when printing of one side is completed, printing of the opposite side is equipped with it.

[0040] If a receiving side transmits MCF and a transmitting side receives this MCF, the rear face of the 3rd sheet of a manuscript will be read by the double-sided read station 3. The read drawing data are transmitted to a receiving side. Since the drawing data which should be transmitted now were ended, a transmitting side transmits EOP.

[0041] A receiving side will print the drawing data at the rear face of the 3rd sheet in the double-sided printing section 6, if the sent drawing data are received. The receiving side is told that the 5th drawing data are the rear face of double-sided reading in MPS. A receiving side sends MCF to a transmitting side. If MCF is sent from a receiving side, a transmitting side will transmit DCN and will end a procedure.

[0042] It can transmit without changing the communication procedure of T.30 which is an ITU-T recommendation about the drawing data of double-sided reading and double-sided printing by according to the gestalt of the 2nd operation adding the information on double-sided reading to the MPS signal which is a procedure signal, and having notified the page information of the drawing data sent to a degree to the receiving side, as explained above, and there is effectiveness which can perform the same printout as a manuscript in a receiving side.

[0043] Next, the gestalt of operation of the 3rd of this invention is explained. The facsimile apparatus of the gestalt of the 3rd operation transmits the drawing data of both sides of a manuscript in the same phase. Drawing 9 is the block diagram showing the facsimile apparatus of the gestalt of the 3rd operation. In drawing 9 , the are recording memory 12 is formed in the facsimile apparatus of the gestalt of the 3rd operation. The are recording memory 12 stores the encoded drawing data or the received drawing data for transmission, and can store now the drawing data for 2 pages. Other configurations are the same as that of the gestalt of the 1st operation.

[0044] Next, transceiver actuation is explained focusing on a communication procedure. Drawing 10 is the sequence diagram based on T.30 AnnexA which is an ITU-T recommendation showing the

communication procedure of the gestalt of the 3rd operation. Like the gestalt of the 1st operation, the information on double-sided reading about each page of a manuscript or one side reading is inputted from the operation interface 2, and is stored in RAM8, and, thereby, page information is registered. In addition, in the gestalt of the 3rd operation, like the gestalt of the 2nd operation, there shall be three number of sheets of the manuscript which should be transmitted, the 1st sheet and the 3rd sheet shall be double-sided reading, and the 2nd sheet shall have become one side reading.

[0045] In drawing 10 , although not illustrated probably, if CNG is transmitted from a transmitting side and a receiving side is called, while the equipment of a receiving side sends CED to a transmitting side in response, NSF, CSI, and DIS will be sent to a transmitting side. A transmitting side accepts these signals. At this time, it declares that use the bit in a NSF signal and perfecting machine ability has equipment of a receiving side like the gestalt of the 1st operation.

[0046] A transmitting side checks the bit which shows the perfecting machine ability of NSF, sends TSI and NSS to a receiving side, and transmits TCF further. Into a NSS signal, the information that the manuscript of double-sided reading is included is inserted.

[0047] A receiving side sends CFR to a transmitting side while it checks the contents of NSS and sets the print station of the double-sided printing section 6 to double-sided mode. A transmitting side will read each page of a manuscript in distinction from one side and both sides based on the page information registered into RAM8, if CFR is received.

[0048] The front face of the 1st sheet of a manuscript is read, the read drawing data are processed by the image-processing section 4, and the double-sided read station 3 is encoded in a sign / decode section 5. The encoded drawing data are stored in the are recording memory 12. After storing, the double-sided read station 3 reverses a manuscript, and reads the rear face of the 1st sheet. The drawing data of the read rear face are processed in the image-processing section 4, and after encoding in a sign / decode section 5, they are stored in the are recording memory 12 like surface drawing data. The drawing data of the front flesh side stored in the are recording memory 12 are gathered in one drawing data in the communications control section 9, and are transmitted to a modem 10. The drawing data transmitted to the modem 10 are sent out to a circuit through the line control section 11, being again controlled by the communications control section 9, after analog data becomes irregular.

[0049] The drawing data of the front flesh side of the 1st sheet are transmitted with the frame of an HDLC format (high-level transmission control procedures). The frame structure is shown in drawing 11 . In drawing 11 , a frame structure consists of the RTC (control return signal) section 55 and the RCP (partial page control return signal) section showing the termination of drawing data of 54 or 1 page of the FCD (facsimile code data) sections which store the drawing data showing the termination of drawing data of 52 or 1 page of the FCD (facsimile code data) sections which store a part for a synchronizer 51, and the drawing data for 1 page for 53 or 1 page of the RTC (control return signal) sections. The FCD sections 52 and 54 and the RCP section 56 are divided into the frame of a 256-byte unit among these. Surface drawing data are stored in the FCD section 52, and drawing data on the back are stored in the FCD section 54. Surface drawing data and drawing data on the back are continuously stored through the RCP section 56.

[0050] Since the manuscript which a transmitting side should transmit still remains after transmitting the drawing data of the front flesh side of the 1st sheet, MPS is transmitted and it waits for the response from a receiving side. After it gets over with a modem 10 and the drawing data inputted from the line control section 11 are processed by the communications control section 9, they are stored in the are recording memory 12. Surface drawing data and drawing data on the back are separated, and the drawing data on the rear face of front stored in the are recording memory 12 are decoded by binary data in a sign / decode section 5 as respectively different drawing data. Then, it is controlled by the printing control section 7, and surface drawing data are printed and drawing data on the back are printed by the rear face of the form on the surface of a form in the double-sided printing section 6, respectively.

[0051] A receiving side transmits MCF to the timing which received MPS. A transmitting side's reception of this MCF reads the front face of the 2nd sheet of a manuscript by the double-sided read station 3. The read drawing data are transmitted to a receiving side. Here, naturally the drawing data for

1 page are transmitted. Succeedingly, since the manuscript which a transmitting side should transmit still remains, MPS is transmitted.

[0052] A receiving side will print the drawing data on the front face of the 2nd sheet in the double-sided printing section 6, if the drawing data of the 2nd sheet are received. Moreover, a receiving side sends MCF to a transmitting side.

[0053] If a transmitting side receives MCF, the drawing data on the rear face of front of the 3rd sheet of a manuscript will be read, and it will transmit to a receiving side, and EOP will be transmitted. As the drawing data transmitted here are also shown in drawing 11 , surface drawing data and drawing data on the back are sent continuously.

[0054] A receiving side transmits MCF to a transmitting side while printing the drawing data on the rear face of front on the front reverse side of the 3rd form in the double-sided printing section 6 like the case of the 1st sheet, if the drawing data on the rear face of front of the 3rd sheet are received. If a transmitting side receives this MCF, DCN will be transmitted and a procedure will be ended.

[0055] While being able to perform the same printout as a manuscript in a receiving side according to the gestalt of the 3rd operation, without changing the communication procedure of T.30 which is an ITU-T recommendation since double-sided drawing data are gathered in one in Phase C (at the time of drawing data transmission) and it was made to transmit as explained above, speeding up of drawing data transmission can be attained.

[0056] Next, the gestalt of operation of the 4th of this invention is explained. Whenever the facsimile apparatus of the gestalt of the 4th operation transmits drawing data, it adds the information about double-sided printing to NSS, and transmits it to a receiving side. Drawing 12 is the block diagram showing the facsimile apparatus of the gestalt of the 4th operation.

[0057] In drawing 12 , a control unit 13 is formed in the facsimile apparatus of the gestalt of the 4th operation, and it can set [which carries out double-sided printing of the drawing data which whether one side reading is carried out set up and received / which carries out double-sided reading of the manuscript / or or / from this control unit 13 / or or] up now whether one side printing is carried out. If double-sided reading is set up in the equipment of a transmitting side, even if the manuscript of only one side is intermingled, double-sided reading will be performed about all manuscripts. Moreover, if double-sided printing is set up in the equipment of a receiving side, the received drawing data will surely be printed by both sides. The 4th configuration of others of the facsimile apparatus of the gestalt of operation is the same as that of the thing of the gestalt of the 1st operation shown in drawing 1 .

[0058] Next, transceiver actuation is explained focusing on a communication procedure. The sequence diagram in which drawing 13 shows the communication procedure of the gestalt of the 4th operation, the flow chart which shows actuation of a transmitting side [in / in drawing 14 / the gestalt of the 4th operation], and drawing 15 are flow charts which show actuation of the receiving side in the gestalt of the 4th operation.

[0059] In transmitting-side equipment, it is specified [which carries out double-sided reading of the manuscript / or or] from a control unit 13 whether one side reading is carried out. In addition, in the gestalt of the 4th operation, there shall be three number of sheets of the manuscript which should be transmitted, the 1st sheet and the 3rd sheet shall be double-sided reading, and the 2nd sheet shall have become one side reading.

[0060] In drawing 13 , drawing 14 , and drawing 15 , it checks first that double-sided printing is turned on by user setup through a control unit 13 in the equipment of a receiving side (step 31). If receiving-side equipment has perfecting machine ability (step 32), when the equipment of a receiving side does not have the perfecting machine ability which sets those with perfecting machine ability up (step 33) in Signal NSF, those without perfecting machine ability will be assigned to NSF (step 34). A setup with the perfecting machine ability to NSF is performed like the gestalt of the 1st operation. Thus, when perfecting machine ability is in the equipment of a receiving side, it declares that use the bit in a NSF signal and perfecting machine ability has equipment of a receiving side. When receiving-side equipment does not have perfecting machine ability, those without perfecting machine ability are assigned to NSF. While sending CED to a transmitting side in response to CNG from a transmitting side, NSF, CSI, and

DIS are sent to a transmitting side (step 35).

[0061] A transmitting side will check the bit which shows the perfecting machine ability of NSF, if NSF is received (step 11) (step 12). Thereby, whether double-sided printing is specified judges a transmitting side (step 13), and when specified, double-sided printing directions and page number m and the front flesh side n are set as Signal NSS (step 14). Since the drawing data sent first here are drawing data of the table of the manuscript of the 1st sheet, as for the page number, a table is set up by 1, as for a front flesh side. Thereby into a NSS signal, the information that the manuscript of double-sided reading is included as shown in drawing 16 is inserted. Drawing 16 is the explanatory view showing the 4th configuration of the NSS signal of the gestalt of operation. Moreover, when double-sided printing is not specified, one side printing directions are set as Signal NSS (step 15). A transmitting side transmits TSI and NSS to a receiving side (steps 16 and 17), and transmits TCF further.

[0062] It sends CFR to a transmitting side while a receiving side receives NSS (step 36), checks the contents (step 37) and sets the print station section of the double-sided printing section 6 to double-sided mode. A transmitting side will read a manuscript in distinction from one side and both sides based on the information on whether double-sided reading specified by the control unit 13 is carried out, or one side reading is carried out (steps 18 and 19), if CFR is received (steps 20, 21, 22, and 23). Double-sided reading is specified in this example, and the front face of the 1st sheet of a manuscript is first read at step 20.

[0063] The double-sided read station 3 reads the front face of the 1st sheet of a manuscript, it is processed by the image-processing section 4, it encodes in a sign / decode section 5, and the read drawing data are transmitted to a modem 10. The drawing data transmitted to the modem 10 are sent out to a circuit through the line control section 11, being again controlled by the communications control section 9, after analog data becomes irregular. At this time, drawing data are sent out as drawing data of the front face of the 1st manuscript (step 24). Moreover, when one side printing directions are set up, the information on the page number and a front flesh side is not given to the drawing data sent out (step 25).

[0064] In a receiving side, if drawing data are received (steps 38 and 39), when double-sided printing is specified, according to the page number "1" of NSS, and front flesh-side information "a table", drawing data will be printed on the surface of a form (step 40). Moreover, when one side printing is specified, drawing data are printed on one side of a form (step 41).

[0065] Since a transmitting side has the manuscript which should still be transmitted after sending out drawing data (steps 26 and 27), EOM is transmitted. It waits for a receiving side to check termination of drawing data by receiving EOM, to transmit MCF, and to transmit the following drawing data (steps 42 and 43). When a transmitting side transmits EOM, after MCF receiving from a receiving side, a communication procedure will be repeated from the start of Phase B.

[0066] Then, a transmitting side and a receiving side will repeat the flow shown in drawing 14 and drawing 15, respectively. However, the information that the information set as NSS transmitted from a transmitting side is the hidden information and the hidden rear face of a manuscript of the 1st sheet that it is drawing data, as double-sided printing directions and the page number is set up.

[0067] In a transmitting side, the rear face of the 1st sheet of a manuscript is read by the double-sided read station 3, and the read drawing data are sent out as drawing data of the rear face of the 1st manuscript. In a receiving side, reception of drawing data prints the drawing data received at the page number "1" of NSS, and the rear face of the form printed last time according to front flesh-side information "a flesh side."

[0068] Since a transmitting side has the manuscript which should still be transmitted after sending out drawing data, EOM is transmitted. When a transmitting side transmits EOM, after MCF receiving from a receiving side, a communication procedure will be repeated from the start of Phase B. Thus, as long as the manuscript which should still be transmitted remains, the drawing data which a communication procedure is repeated from the start of Phase B, and are transmitted are transmitted to order called the table of the 2nd sheet, the flesh side of the 2nd sheet, the table of the 3rd sheet, and the flesh side of the 3rd sheet, and printing be similarly performed at a receiving side with the gestalt of the table of the 2nd

sheet, the flesh side of the 2nd sheet, the table of the 3rd sheet, and the flesh side of the 3rd sheet. Here, in this example, although the manuscript of the 2nd sheet has drawing data only in one side, the rear face of the 2nd sheet which does not have drawing data even in this case will be read, that reading data will be transmitted, and a receiving side will also print that reading data.

[0069] The same printout as a manuscript can be performed in a receiving side, without changing the communication procedure of T.30 which is an ITU-T recommendation according to the gestalt of the 4th operation, even if it makes it return at Phase B, whenever it transmits the drawing data for 1 page as explained above.

[0070] Next, the gestalt of operation of the 5th of this invention is explained. The facsimile apparatus of the gestalt of the 5th operation transmits the information about double-sided printing to drawing data and coincidence to a receiving side. The 5th configuration of the facsimile apparatus of the gestalt of operation is the same as that of the thing of the gestalt of the 4th operation shown in drawing 12 , and explanation of a configuration is omitted.

[0071] Next, transceiver actuation is explained focusing on a communication procedure. The sequence diagram in which drawing 17 shows the communication procedure of the gestalt of the 5th operation, the flow chart which shows actuation of a transmitting side [in / in drawing 18 / the gestalt of the 5th operation], and drawing 19 are flow charts which show actuation of the receiving side in the gestalt of the 5th operation.

[0072] In transmitting-side equipment, it is specified [which carries out double-sided reading of the manuscript / or or] from a control unit 13 whether one side reading is carried out. In addition, in the gestalt of the 5th operation, like the case of the gestalt of the 4th operation, there shall be three number of sheets of the manuscript which should be transmitted, the 1st sheet and the 3rd sheet shall be double-sided reading, and the 2nd sheet shall have become one side reading.

[0073] In drawing 17 , drawing 18 , and drawing 19 , it checks first that double-sided printing is turned on by user setup through a control unit 13 in the equipment of a receiving side (step 71). If receiving-side equipment has perfecting machine ability (step 72), when the equipment of a receiving side does not have the perfecting machine ability which sets those with perfecting machine ability up (step 73) in Signal NSF, those without perfecting machine ability will be assigned to NSF (step 74). A setup with the perfecting machine ability to NSF is performed like the gestalt of the 1st operation. Thus, when perfecting machine ability is in the equipment of a receiving side, it declares that use the bit in a NSF signal and perfecting machine ability has equipment of a receiving side. When receiving-side equipment does not have perfecting machine ability, those without perfecting machine ability are assigned to NSF. While sending CED to a transmitting side in response to CNG from a transmitting side, NSF, CSI, and DIS are sent to a transmitting side (step 75).

[0074] A transmitting side will check the bit which shows the perfecting machine ability of NSF, if NSF is received (step 51) (step 52). Thereby, whether double-sided printing is specified judges a transmitting side (step 53), and when specified, double-sided printing directions are set as Signal NSS (step 54). Drawing 20 is the explanatory view showing the NSS signal of the gestalt of the 5th operation. As shown in this drawing, only the information that it is double-sided reading is inserted in NSS. Moreover, when double-sided printing is not specified, one side printing directions are set as Signal NSS (step 55). A transmitting side transmits TSI and NSS to a receiving side (steps 56 and 57), and transmits TCF further.

[0075] It sends CFR to a transmitting side while a receiving side receives NSS (step 76), checks the contents (step 77) and sets the print station section of the double-sided printing section 6 to double-sided mode. A transmitting side will read a manuscript in distinction from one side and both sides based on the information on whether double-sided reading specified by the control unit 13 is carried out, or one side reading is carried out (steps 58 and 59), if CFR is received (steps 60, 61, 62, and 63). Double-sided reading is specified in this example, and the front face of the 1st sheet of a manuscript is first read at step 60.

[0076] The double-sided read station 3 reads the front face of the 1st sheet of a manuscript, it is processed by the image-processing section 4, it encodes in a sign / decode section 5, and the read

drawing data are transmitted to a modem 10. The drawing data transmitted to the modem 10 are sent out to a circuit through the line control section 11, being again controlled by the communications control section 9, after analog data becomes irregular. at this time, drawing data are sent out as drawing data of the front face of the 1st manuscript -- having (step 64) -- as shown in drawing 21 , the page number "1" and front flesh-side information "a table" are added to the head of drawing data as page information. In this case, although 1 is sufficient for the number of bits of front flesh-side information, the number of bits of the page number shall be secured if needed. Moreover, when one side printing directions are set up, the information on the page number and a front flesh side is not given to the drawing data sent out (step 65).

[0077] In a receiving side, if drawing data are received (steps 78 and 79), when double-sided printing is specified, according to the page number "1" of the page information transmitted with drawing data, and front flesh-side information "a table", drawing data will be printed on the surface of a form (step 80). Moreover, when one side printing is specified, drawing data are printed on one side of a form (step 81).

[0078] Since a transmitting side has the manuscript which should still be transmitted after sending out drawing data (steps 66 and 67), MPS transmission is carried out. This waits to check that a receiving side has drawing data still sent (steps 82 and 83), to transmit MCF, and to transmit the following drawing data.

[0079] In a transmitting side, the drawing data which read the rear face of the 1st sheet of a manuscript by the double-sided read station 3 are transmitted as drawing data of the rear face of the 1st manuscript. At this time, the information of a rear face is transmitted to the head of drawing data by the 1st page as page information at coincidence. In a receiving side, the received drawing data are printed at the rear face of the form printed last time based on this information.

[0080] Since a transmitting side has the manuscript which should still be transmitted after sending out drawing data, MPS is transmitted, and after MCF receiving from a receiving side, the following drawing data are transmitted. The information of a front face is added to this drawing data by the 2nd page. Hereafter, the drawing data which repeat this actuation and are transmitted are transmitted to order called the flesh side of the 2nd sheet, the table of the 3rd sheet, and the flesh side of the 3rd sheet after this, and printing is similarly performed at a receiving side with the gestalt of the flesh side of the 2nd sheet, the table of the 3rd sheet, and the flesh side of the 3rd sheet. Here, in this example, although the manuscript of the 2nd sheet has drawing data only in one side, the rear face of the 2nd sheet which does not have drawing data even in this case will be read, that reading data will be transmitted, and a receiving side will also print that reading data.

[0081] The same printout as a manuscript can be performed in a receiving side, without changing the communication procedure of T.30 which is an ITU-T recommendation according to the gestalt of the 5th operation, even if it transmits page information with drawing data as explained above.

[0082] This invention is not limited to the gestalt of each above-mentioned implementation, and further various deformation is possible for it. For example, although the page number is transmitted as page information with the gestalt of said 4th operation, and the gestalt of the 5th operation, even if it does not necessarily transmit this page number, printing by the receiving side is possible.

[0083] Moreover, although the operation interface section is prepared and the operator is made to direct double-sided reading with the above 1st, the 2nd, and the gestalt of each 3rd operation, the blank paper judging section is prepared, it judges whether a manuscript is a double-sided manuscript and whether it is an one side manuscript, and you may make it exclude a help input, as shown in drawing 22 . Drawing 22 is the block diagram showing the facsimile apparatus of the gestalt of the 6th operation.

[0084] In drawing 22 , the blank paper judging section 14 counts the total number of black pixels for 1 page, and when there is less the counted value than the predetermined number of black pixels, it judges the drawing data of both sides of the manuscript read by the double-sided read station 3 with a reading side being a blank paper. And according to the judgment result of this blank paper judging section 14, double-sided reading or one side reading is set up. Thus, by forming the blank paper judging section 14, a setup of double-sided reading is attained automatically, without an operator intervening.

[0085]

[Effect of the Invention] It is effective in the ability to obtain the same printout as a manuscript by the receiving side, without changing the means of communications of T.30 which is an ITU-T recommendation by checking that a double-sided function is in a receiving side according to this invention as explained to the detail above, and transmitting page information to a receiving side.

[Translation done.]